

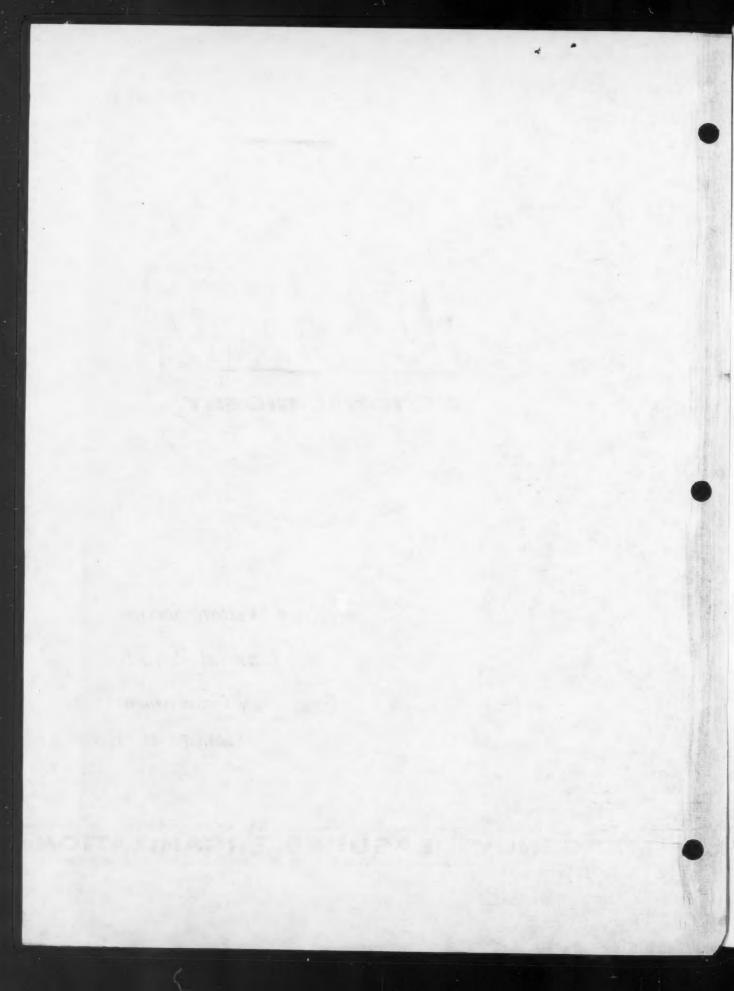
Emergency Welfare Services

Essential Records

Emergency Government

Headquarters

MERGENCY MEASURES ORGANIZATION



# EMERGENCY MEASURES ORGANIZATION

### PRIVY COUNCIL OFFICE

Produced By The

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## A Message from the Director

You may recall that in the last issue of "Civil Defence—Canada", I forecast the possibility of some changes in the production of this Bulletin. We had thought that these changes would probably be progressive over the next few months. However, due to favourable circumstances and the fullest co-operation from the Queen's Printer, we have been able to make changes in format considerably more quickly than had been anticipated. It is hoped they will meet with your approval.

With this first issue of the "EMO National Digest", which now replaces "Civil Defence—Canada", your attention is directed to the instructions contained on the inside of the back cover. Only those who return the card will continue to receive the Digest.

In future issues, under the general heading 'A Message from the Director', it is intended to highlight some event or events of significant interest in emergency planning.

Shortly, Federal EMO will be advising the provinces, through the Regional EMO Officers, of a rather extensive public information programme being planned for 1961. I am sure that all who have been associated with emergency planning in the past will be heartened and encouraged by the general nature of the plan. I would also point out that it will be important that provincial and municipal officials support the national proposals. This is the only way in which such a programme can be effective. I think it would be fair to say that the aim this year will be to make available the type of information that will enable individuals to make their personal survival plans. This is, in many ways, the most challenging aspect of our total programme. It is also a difficult one but it is vitally important if civil emergency planning is to be at all meaningful.

Those receiving the DIGEST also have a responsibility in this regard by making the information they have available to people they meet in their day-to-day contacts. Through personal discussion, through the various national, provincial and local programmes, public survival measures can be made known to all.

Blurry

#### **EMERGENCY WELFARE SERVICES**

The development of Emergency Welfare Services is essential to National Survival. Miss G. Dunn of the Federal Emergency Welfare Services has briefly outlined the organization of these services in this article.

SHEER physical survival is the basic concern of all persons responsible for civil emergency planning. There may be an extensive evacuation of people both before and after an emergency. Whether the people are from target areas or from fallout areas, or whether this is a pre-attack voluntary evacuation or evacuation after an attack, matters little. Survival services will be needed.

Emergency Welfare Services (E.W.S.) are an indispensable part of the survival programme that would be required in any national emergency.

#### RESPONSIBILITY

The responsibility for the development of E.W.S. is shared by the three levels of government as follows:

Under Section 4 of the Civil Defence Order, the Department of National Health and Welfare has been re-assigned the responsibility, among other responsibilities, of assisting the provinces, municipalities and others in the planning, organizing and the operating of E.W.S.

The provinces are responsible for planning for the provision of E.W.S. in all communities.

The municipalities are responsible for planning and organizing the E.W.S., and for the actual dispensing of E.W.S. to victims of an attack. Therefore, there should be a sound E.W.S. organization with operational capability in every community in Canada, so that E.W.S. could begin effective operations immediately upon receipt of any warning, or indication of an attack.

#### **EMERGENCY WELFARE SERVICES**

There are five E.W.S. that should be established in every community. They are essentially the same as basic community welfare services:

**Emergency Clothing** 

**Emergency Lodging** 

**Emergency Feeding** 

Registration and Inquiry

Personal Services

#### **Emergency Clothing**

Many persons arriving in Reception Areas will be inadequately clothed, especially if there has been an attack without warning. This service is responsible for providing emergency clothing—new and used—to those in need.

Initially there would be the provision of any type of warm covering to prevent loss of life, and then such clothing as to permit people to work and care for themselves. Any contaminated clothing of workers and evacuees must be replaced.

#### **Emergency Lodging**

The aim of this service is to provide immediate temporary lodging for evacuees who are unable to make and/or carry out their own emergency lodging arrangements in reception areas—including persons brought out of damaged or fallout areas, and the walking sick discharged from hospitals. Persons will be billeted in private homes, and in congregate facilities when necessary.

#### **Emergency Feeding**

This service is responsible for the emergency feeding of victims of an attack—including casualties and civil defence workers.

It is urged that every individual or family have an Emergency Food Pack—at least seven days and preferably fourteen days supply—in constant readiness. Persons in probable target areas who may not be able to return home to get this pack before evacuation, are advised to have a Three Day Survival Food Kit at their place of work.

#### **Registration and Inquiry**

Family members may be separated and many people will be injured or killed in an attack. The function of this service is to reunite members of separated families, and to answer inquiries regarding the safety and whereabouts of loved ones.

#### **Personal Services**

Individual care and material assistance must be available to help individuals and families with their personal and rehabilitation problems. This individualized service is provided through four Bureaux:

Reception

Unattached Children and Dependent Adults Welfare Institutions

Counselling Services and Emergency Aid

#### SUPPORTING SERVICES

The efficient operation of the E.W.S. will be dependent upon the support of many existing Agencies and Departments of Government such as Private Welfare Agencies and Organizations, the War Supplies Agency, Post Office Department, Health, Police, Transportation and other municipal services.

#### METHOD OF IMPLEMENTATION

#### Federal Level

The Federal E.W.S. Division will carry out its responsibility in the following eight ways:

The development of basic E.W.S. plans, policies and procedures which are capable of application throughout Canada. This involves working with government at all levels and with various private welfare agencies and organizations.

The provision of guidance and assistance to the provinces, municipalities and others in relation to planning, organizing and operating the five Emergency Welfare Services.

The continued provision of Welfare Specialist Training Courses at the Canadian Civil Defence College.

Conferences for Provincial Welfare Directors will be held from time to time. In addition, Federal Welfare Officers are available to go out and assist actively in the preparation and conduct of Specialist and General Welfare Courses in the Provinces.

The provision of assistance in the preparation and conduct of Welfare Exercises, whether Provincial, Zone or Local.

The co-ordination of E.W.S. plans with the emergency plans of other government departments at all levels (e.g. Post Office Department; Emergency Supply Planning Branch, etc.).

The preparation, production and distribution of training materials and operational equipment and forms. (e.g. Mobile Feeding Unit, Registration and Inquiry Cards, Precis, Film strips, etc.).

The preparation, production and distribution of public educational materials—including pamphlets, displays for exhibitions and conventions, etc.

The co-ordination of E.W.S. plans between Canada and the United States. It is essential that welfare policies, procedures and equipment in these two countries be as uniform as possible, as there may be a movement of people across the border in both directions, and probably an interchange of welfare personnel.

#### Provincial and Municipal Level

Provincial and Municipal Departments of Public Welfare, where they exist, are the logical bodies to assume the overall responsibility for developing Provincial and Local E.W.S. because:

They are staffed by experienced welfare workers. There is an understanding of the basic welfare problems to be faced, even though E.W.S. may be somewhat different in character to those which form their peacetime programmes. There are Provincial Welfare field organizations already in existence.

In an emergency, people in need automatically turn to the local Department of Public Welfare.

#### AGENCIES AND VOLUNTEERS

The Civil Defence Order recognizes that assistance will be needed from all private welfare agencies and many volunteers. It covers them by the term "others".

It is essential that the resources and services of all private welfare agencies and organizations be co-ordinated with the public services both in probable target areas and in reception areas, with all being capable of rapid expansion to meet the emergency welfare conditions which would develop should a nuclear war occur. Only where appropriate welfare services do not already exist will new E.W.S. be created.

The welfare task will be so tremendous, that the assistance of large numbers of trained welfare volunteers would be required to "man" the thousands of Welfare Centres which would have to "spring up" overnight across Canada. Volunteers must be trained for their jobs. This must be done co-operatively by the three levels of government.

More than two thousand key welfare workers have been trained at the Canadian Civil Defence College to date. In addition, many thousands of emergency welfare workers have been trained at the provincial and local levels.

#### Conclusion

Emphasis is being placed on the ability of Departments of Welfare to carry on in an emergency, using their peacetime structures as the nuclei from which the five E.W.S. are developed and operated. To do this, they must depend upon the availability of trained volunteers, and the resources of private welfare agencies.

The E.W.S. Division is stressing the importance of individual self-help. A real effort must be made to induce each and every citizen to prepare to save his own life. Each person or family should have an emergency supply of food, clothing, and other essential survival items available; they should have decided upon an eventual Family Meeting Place; and they should have provided some means of indicating their identity.

In addition, the E.W.S. Division believes that it is very important that there be an adequate, continuous, public educational programme, so that Canadians are mentally prepared for survival action and shelter living if necessary—as the proper mental attitude will be just as important as emergency supplies, equipment and services in the event of an attack.

#### PRESERVATION OF ESSENTIAL RECORDS

Mr. Murdock Mackenzie is a member of Federal EMO and is responsible for co-ordination of External Liaison, and the Federal Governments Essential Records Programme.

A programme for the preservation of Essential Records is complementary to the organizational and physical arrangements necessary to ensure the continuity of civil government in an emergency. The availability at the right places and times of those records absolutely essential to the carrying on of the business of government will govern to a considerable degree the extent to which the emergency functions of government can, in fact, be discharged by the persons responsible for them.

#### **Ensuring Adequacy of the Programme**

The key to the initiation of an efficient Essential Records preservation programme is effective records management. Under such management, government departments and agencies will not only achieve preservation objectives for Essential Records created in the future but will benefit from improvements in operating efficiency and administrative economy. Experience of records management officers has shown that organizations are initially appalled at the problem involved in processing an enormous backlog of old records for Essential Records preservation. Their advice has been to concentrate first on setting up an efficient records control for future records, thus safeguarding the future; this having been done, attention can then be concentrated on the backlog. If an efficient records management system is not given priority, there does not appear to be much hope for an adequate Essential Records preservation programme.

As has already been indicated, in determining what are Essential Records there are two conflicting tendencies to be reconciled:

the tendency of people to over-emphasize the value of the tasks they are performing and consequently to earmark too many records as essential; and, the tendency of people to forget that when someone else must perform their essential functions, that other person will not have the benefit of all the information in their own minds.

The records must be complete enough to enable a person relatively strange to the job to carry it out, and yet they must be limited enough to make a continuing programme practical.

The percentage of all records that deserve designation as Essential Records will vary with the functions to be performed, but the percentage will be relatively small. It is estimated that not more than one or two percent of total record holdings would be Essential Records.

#### Assumptions

The federal programme has been based on the following assumptions, which generally are applicable to provincial and local governments as well as to federal departments:

Planning for the preservation of Essential Records is next in importance to the planning for the survival of personnel.

In the event of nuclear war some large Canadian cities might be probable targets.

The entire concept of "protection" must be based on relative rather than absolute safety since adequate underground storage facilities are not available and no vault near or above the surface of the ground will withstand a direct hit by a nuclear bomb or missile.

The need for duplication of records will vary according to the value of the record,

the normal distribution of copies, and the relative safety of the places to which the copies are distributed.

Removal to an unlikely target area is the most practical means of providing protection.

A calculated risk must be taken with regard to certain records of lesser value than those identified as Essential Records.

#### Responsibilities

In addition, in the Essential Records programme the following principles of responsibilities have been recognized:

Each department and agency is responsible for planning and taking the action necessary to protect its own records. The function of the Emergency Measures Organization in the Essential Records programme is to orient, co-ordinate and advise.

#### Categories

Standards for identifying the Essential Records of a department cannot be established except in very general terms, but such records fall into one or more of the following categories:

#### First Category

Operating records essential to the basic functions of the federal government for the duration of an emergency if this country is attacked, for example, records necessary to:

> the military operations of the defence forces; the conduct of survival activities by the various authorities; the mobilization and protection of the material and manpower resources of the nation; the maintenance of public health, safety and order.

#### Second Category

Records necessary to reconstruct a department following the emergency period, such as administrative, technical and research records.

#### Third Category

Records essential to the preservation of legal rights of the state and individual citizens, such as annuity, citizenship, tax and certain personnel records.

#### **Identification of Essential Records**

The key to identifying Essential Records in the First Category is that only records necessary to the conduct of survival functions during or immediately following an attack are involved. Much of what most employees do from day to day would not be done in an emergency. Normally, in identifying the Essential Records of a department or office, either one of two methods can be used, although it may be advisable to use both. A complete inventory is compiled, showing all records touching on emergency functions, and then a selection is made from them of the records to be safeguarded; or there is a careful study of how the functions would be carried out under emergency conditions, and then on a basis of this study a listing is made of what records would be required. In either case, the only way to determine the completeness of the selection is through a test under emergency conditions.

It cannot be overemphasized that in identifying Essential Records, the records must be evaluated only in regard to their essentiality in carrying out emergency functions, protecting legal rights, or reorganizing a department. Experience has indicated that in many cases personnel are so familiar with existing problems and carry so much knowledge in their heads that they have not given sufficient attention to records which should be at emergency sites. They tend to overlook the fact that in time of emergency they themselves may not reach the emergency or relocation site, and that people not so well acquainted with their activities may have to take over. If the records are not adequate for use by others, they are not adequate.

#### **Emergency Functions**

In determining what are indispensable records of activities peculiar to individual departments, each must, of course, make its own decision in the light of the emergency functions for which it is responsible. The records designated will be greatly influenced, however, by whether the emergency function is simply a continuation of a normal peacetime programme or is instead a completely or nearly completely new programme, such as price control, which is not a normal function of any existing organization.

If the emergency function represents continuation of a normal programme, copies of those records showing the current status of the programme will be needed. Basically what is needed here are security copies of summary information needed to continue and expand a current programme.

On the other hand, if the emergency function, or a part of it, consists of the administration of a programme not a part of normal government functions, what has to be safeguarded is background material on how the work was done in previous emergencies or how it should be done. Forms used to accomplish the function, reports required, regulations, procedures and, particularly, critical evaluations of the success of comparable past programmes will be important. Such material may often be available in printed or published form rather than as manuscripts. Regardless of form, they will be all-important in getting the programme off to a fast and effective start.

## HEADQUARTERS FOR EMERGENCY GOVERNMENT

On 31 May 1960, the Prime Minister announced to the House of Commons that "Regional centres will be established speedily in each of the provinces". Mr. R. L. Beatty of EMO, the author of this article, has been one of the planners in developing the concept of these centres.

No responsible government today can neglect the possibility of nuclear war. Our Federal Government is therefore making the necessary preparations in peacetime to ensure effective government in wartime on the assumption that if the country is to survive the effects of possible nuclear attack, there must be a government in existence which could direct the survival policy of the nation.

#### The Intention

The general intention is therefore to create a decentralized federal system of emergency government with central (national), regional (provincial), and zonal units through which vital work of the Federal Government could be carried on,

should circumstances require it, even under most difficult conditions. In Ontario and Quebec, because of their size and population, an additional element known as a sub-region has been introduced in the emergency structure between the regional and zonal units.

It is expected that the activities of the Provincial and the Federal Governments will be closely integrated at regional and zonal levels, each being responsible for their own emergency functions. The necessary co-ordination with local units of government will be achieved at the zonal level. The central authority will be based on a nucleus of Ministers, officials, military officers and others in the Ottawa area. Regions will correspond with provincial boundaries and the regional authority will, in each instance, be composed of a small

number of federal, provincial and military officials under the direction of a person designated by the Prime Minister.

#### Joint Headquarters

The emergency organization, with its decentralized elements, will have a higher probability of providing effective operational control under nuclear attack conditions than units of government working from their existing locations. A primary objective of the system will be to integrate the activities of the federal, provincial and municipal governments into one closely co-ordinated system. To achieve this, joint headquarters will be provided for areas where more than one level of peacetime government has a responsibility, which headquarters will be outside target areas and provided, in some instances, with adequate fallout protection.

These joint headquarters will ensure that civil governments will be provided with the data on the tactical situation that will be required for them to make decisions affecting government and the civil population. The Army will have the responsibility of developing this information at all appropriate emergency government headquarters. Under survival conditions, when speed in policymaking and action-taking will be vital to ensure efficient survival control, the emergency government organization must permit the closest coordination between the several departments which will often be concerned with many of the individual survival policies. Specially-designed emergency communications systems will serve the elements of emergency government. For maximum efficiency, the users of the system must therefore be grouped in the joint headquarters across the country.

#### **Central Facilities**

The central element of the emergency government system will include a number of main headquarters from which small cores of senior departmental officials, including Cabinet Ministers, will establish and direct departmental policy. The relatively small departmental groups in these main central sites will require support and assistance of larger departmental elements which will be accommodated at a number of relocation sites outside Ottawa, reasonably placed in relation to the various main headquarters.

#### **Regional Facilities**

The main regional sites will be so located that the danger from blast resulting from aimed attack elsewhere will be negligible and they will have full protection against fallout. They will be the centre of federal and provincial government activities for the area. The same departments of the Federal Government that are represented in the national complex will be duplicated, to a greater or lesser extent, at the regional headquarters. It is expected that both Federal and Provincial staffs would also be supported by larger groups at relocation sites in a similar manner to that planned for the national headquarters.

#### Sub-Regional and Zonal Elements

In most parts of Canada, emergency government regions will be sub-divided directly into zones, except in Ontario and Quebec where a further sub-division, known as a sub-region, will be required so that a manageable system will result. There will likely be four such sub-regions in Ontario and two in Quebec, whose boundaries will be obtained by grouping zones into effective operational units. In general, the elements of the Federal/Provincial Governments that are represented at the zone would also have staffs in a subregional headquarters. As these headquarters will be in existing buildings, which might only have that fallout protection inherent in the structure. efforts will be made to locate the buildings in centres where the hazard from fallout is as slight as possible. Buildings with the best possible fallout protection factor will be selected to reduce the probability that the headquarters would become inoperative because of fallout.

#### **Zone Boundaries**

Zonal boundaries have been determined by considering such factors as population, transportation, communications and existing local government boundaries, based on a study of systems now used by the Federal and Provincial Governments to sub-divide provinces. The number will vary from about 19 in the largest province to one in the smallest. Although the exact definition of the responsibilities of the Federal and Provincial Governments in zonal headquarters is a matter requiring further study, it is expected there will be representatives from all departments that have a function essential to survival. The federal emergency government communications system will extend to the zonal level, thereby giving these units a link through to the national headquarters system.

#### Responsibilities of Emergency Government

This central, regional and zonal system will be the organization through which it is planned to conduct the business of the Federal Government in at least the early stages of a major war. The essential responsibilities of this emergency government can be defined as follows, with the emphasis on each function varying with the different levels in the organizational structure:

General direction of defence forces.

Conduct of foreign relations during the war.

General direction of civil defence activities.

Preservation of law and order.

Provision and allocation of housing accommodation.

Provision and distribution of food, fuel power and other essential supplies.

Provision and control of essential medical and public health services.

Maintenance and control of transport and communications facilities.

Basic management of public finances and whatever emergency financial measures might be necessary to maintain a workable economic system. Direction and control of the production and distribution of various essential materials and services, including control of prices.

Re-employment of manpower in accordance with emergency priorities.

It is the responsibility of government departments concerned to study in detail their wartime responsibilities so that they will be in a position to ensure effective emergency control in war. This study will determine the size and composition of departmental representation at the various levels in the system and the appropriate persons, together with alternates will be designated in peacetime for these tasks.

#### Manning the Facilities

In order that emergency government will be able to carry out its functions from the emergency facilities that are being provided, a detailed procedure with regard to the manner in which the facilities will be manned is being developed. Although the details of the manning vary with the different levels in the emergency structure, the principle followed is that the system must be capable of beginning operation in a time commensurate with the threat to the area. In some instances this will mean that the facilities must be manned to some extent in peacetime, while in other cases it will be sufficient to develop detailed plans for the personnel to reach the installation in the minimum time.

#### Conclusion

In summary, the programme for the provision of emergency government headquarters consists of:

- a. The provision of suitable facilities to ensure government can function under nuclear attack conditions and to permit the closest integration of federal, provincial and local elements.
- b. The analysis and definition of emergency government responsibilities throughout the system.
- The development of procedures for manning emergency facilities.

# FIRST AID COMPETITION

In November the 13th Annual Convention of the International Rescue and First Aid Association was held in Philadelphia. The Commandant C. L. Smith, and the Chief Rescue Instructor Mr. F. Evans of the Canadian Civil Defence College attended the convention. One of the highlights of this Convention was the Rescue and First Aid Competitions.

In the Rescue Competition the Dominion Bridge Emergency Squad of Montreal, and Rescue No. 1 of Toronto placed First and Fourth respectively. A total of 12 teams were entered.

Of thirty nine teams entered in the First Aid Competitions Metro Toronto's Civil Defence Entry (St. John Ambulance) placed first, and Rescue No. 1 of Metro Toronto placed eighth.

The Mount Orford Ski Patrol of Magog, Quebec placed second in the First Aid Competition.

The International Rescue and First Aid Association is an association of organized rescue squads, ambulance and first aid units equipped with all types of rescue and first aid apparatus and devices which can be carried in mobile units, either by surface, water or air transport; and individual members, both men and women, active or interested in the rescue and first aid movement. The Second Vice-President of the Association is Mr. Fred Evans of the Canadian Civil Defence College.

#### **NUCLEAR WEAPONS EFFECTS**

In recent months some very misleading statements have been made concerning the effects of nuclear weapons. Dr. E. E. Massey of the Defence Research Board has prepared a paper on the subject of nuclear weapons effects. This issue of the Bulletin will carry his introductory statement and the blast effects. Succeeding issues will be devoted to the heat effects and radioactivity effects.

#### INTRODUCTION

WHETHER we call them "nuclear" or "atomic" weapons, they range in power from less than 1 kiloton (1 kiloton = 1,000 tons) to many megatons (1 megaton = 1,000,000 tons) equivalent of high explosives—more specifically TNT.

#### Uncertainties of Making Calculations

If we know the effects produced by a weapon of a particular size, we can calculate approximately what a different size weapon will do. Such calculations are sufficiently precise for practical purposes. Indeed, a high degree of precision would be more misleading than helpful in planning, because there are so many uncertainties which cannot be taken into consideration in making calculations. For example:

The weapon size that an enemy might use is unknown.

The precise aiming point for any target area is unknown.

The height of burst is unknown. Bombing accuracy is unknown. Effects are not symmetrical about the point of burst.

The number of bombs on any target is not known.

The weather conditions cannot be predicted.

The bomb designs, specifically the ratio of fission yield to fusion yield will not be known.

Hence, gross effects only should be used in planning.

#### Relationship to Other Explosions

To those who have not seen one of these explosions, figures and units mean very little. The Nagasaki, or nominal bomb is rated at 20 kilotons. How much energy is 20 kilotons? Perhaps one of the more meaningful statements is to say that this amount of energy suitably applied could raise a ship the size of the Queen Mary to a height of seventy miles. A nominal bomb releases ten times as much energy as the explosion of the ammunition ship Mont Blanc, which contained the equivalent of 2000 tons of TNT and which all but destroyed Halifax in 1917. Extending this analogy, one megaton would be represented by the explosion of a line of such ships stem to stern and extending for twenty miles. Even so, this is small compared with natural phenomena. Somebody has calculated that this is sufficient energy to keep a hurricane in business for about twenty seconds. The Operation Ivy test of November 1952 lifted 1/80 cubic miles of coral sand-the Krakatoa volcano, in 1883, lifted 13 cubic miles.

#### The Four Effects

With these preliminaries, let us go on to consider in some detail the effects of these weapons. As many have often read, the effects are four-fold—Blast; Heat (or thermal radiation); Initial Nuclear Radiation; Residual Nuclear Radiation.

#### **BLAST EFFECTS**

#### **Building Damage Classification**

Blast is a direct cause of damage to structures. Damage results are due to the pressure in the shock wave and to the associated wind which follows the shock front. For practical purposes, building damage is divided into four categories called A, B, C and D. The A damage zone is defined as that in which almost complete destruction of ordinary buildings takes place. B damage -ordinary buildings are damaged beyond repair. C-buildings must be vacated until repaired. D -buildings usable during repair. These classifications are more useful than such vague descriptions as moderate damage, severe damage, light or partial, which are apt to take on different meanings depending on whose property it is that's damaged.

#### Scaling the Damage

Having defined A, B, C and D damage, it is possible to calculate sufficiently accurately for practical purposes, what the size of these damage zones will be for any yield of atomic weapon starting from the observed effects of a known yield weapon. For the nominal bomb A, B, C and D damage extends respectively to  $\frac{1}{2}$ , 1,  $1\frac{1}{2}$  and 2 miles from ground zero—the point directly under the point of burst of the weapons.

#### The Scaling Law

The scaling law may be stated: For blast effects, linear dimensions scale as the cube root of the weapon yield. Thus, for an eight times nominal bomb the damaged distances would be double. A 20 megaton bomb would increase the damage radii by 10 times. The damage distances given are for bombs burst in the air at such a height that the area affected by blast is maximized. When bursts take place at ground level, these distances are reduced somewhat.

#### Response of Structures

The criteria of damage differ with different types of targets. Some structures respond mainly to diffraction force and consequently are primarily sensitive to peak over-pressure. Such structures are: multistory reinforced concrete buildings with small window area, large wall bearing structures like apartment houses, and wood frame buildings like dwelling houses. Other structures respond mainly to drag forces due to the blast wind. These are smokestacks, towers, poles, truss bridges and steel frame buildings with frangible walls. In the first case the duration of the blast wave does not matter but in the latter case it does. Consequently since, at the same peak overpressures, the wave from larger weapons lasts longer than that for smaller weapons, larger weapons will damage drag-type targets at greater distances relative to pressure-type targets than smaller weapons will. The cube root law mentioned a few moments ago holds for diffraction-type targets; for drag targets distances are greater for larger weapons.

#### Misguided Missiles

Drag forces can cause translational displacement of the body with resultant injury. As an indirect consequence of blast many injuries can be caused by flying debris and collapsing buildings. The number of missiles produced is astonishing. In some tests, where the peak overpressure was 5 p.s.i. the missile density near and inside

houses ranged from 66 to 207 missiles per square foot, while their velocities ran from 60 to 340 feet per second. It follows that, even where structural damage may be considerable, casualties can be greatly reduced by taking cover against collapsing buildings, flying debris and high winds.

#### Speed of Shock Wave

There is some delay between the explosion and the arrival of the blast for the same reason that there is a delay between a lightning flash and its thunderclap. The shock wave travels roughly with the speed of sound (actually 3 seconds for the first mile, 4 seconds for the next mile and about 5 seconds per mile thereafter). It is thus possible under many conditions for people in the open to increase their chances of survival in the interval between the explosion and the arrival of the blast wave.

#### **Blast and Secondary Fires**

Another secondary effect of blast is the possible production of fires (called secondary fires) due to upsetting heating appliances and similar occurrences. It is virtually impossible to predict the extent to which this is likely to occur. There is sufficient evidence to indicate that steps can be taken to reduce considerably the incidence of such fires by tidying up the more combustible materials, smothering open fires, turning off gas at the mains.

# PROVINCIAL AND MUNICIPAL ARRANGEMENTS FOR CIVIL EMERGENCY PLANNING

Mr. J. F. Wallace is an Assistant Director of Federal EMO.

7<sub>N</sub> 1957, the federal government, after studying the implications of nuclear war, decided that if Canada was to survive such a war, government itself must become involved in civil emergency planning to a greater degree than ever before. Thus, in 1957, at the federal level, another organization became involved in civil emergency planning—the Emergency Measures Organization of the Privy Council Office was to be generally responsible for the development of programmes directed toward the survival of Canada as a nation. The Federal Civil Defence Headquarters of the Department of National Health and Welfare still continued to devote its attention to matters which were more directly related to the survival of the population (civil defence matters).

#### A New Concept

In 1959, the federal government decided that civil defence functions should be reassigned to other departments of government. The Emergency Measures Organization became the government's main co-ordinating agency in the whole field of civil emergency planning. Civil defence, in Canada, had been developed to reduce the impact of bombing attacks upon civil populations, and relied to a great extent upon the recruitment and training of volunteers, to deal with the activities which would arise as a result of such attacks. This concept had been adequate for relatively small scales of attack but the destructive potential of nuclear weapons rendered the concept meaningless.

Population survival measures could not be effective in the age of nuclear weapons unless the full weight of government was brought to bear on the problem. Hence a new concept of civil defence was evolved, and it is upon this concept that provincial and municipal governments are being

encouraged to develop their emergency planning. Civil defence is not an organization of government but is the function or activity of government during periods of emergency.

# Planning Continuity of Provincial and Local Government

Although provincial and municipal governments have major responsibilities which are directly related to measures for the survival of people, the remainder of this article will outline those matters which are considered to be essential to emergency government planning programmes. They are specially directed to governments of provinces and probable target areas. Certain objectives are indicated and lines of action outlined to meet these objectives.

Emergency Functions—Provincial and municipal governments should conduct a detailed study of departmental functions and determine which of these functions must be continued during an emergency and then develop appropriate plans to ensure the continuity of these functions.

Key Officials and Employees—Departments must assign, in peacetime, officials and employees to carry out these functions during the emergency period.

Lines of Succession—Departments of government should create lines of succession of authority among elected officials, officers, and key employees, to ensure that authority will be preserved.

Essential Records—Certain records of government, if lost, could cause indecision or even chaos during emergency. Therefore, all departments should analyze their records, determine which are vital to the continued operation of government, and make arrangements for their safe storage.

Emergency Headquarters—In general, the direction of government operations cannot be expected to be conducted from peacetime locations. Therefore, emergency government headquarters will have to be established in relatively safe and protected locations.

Departmental Relocation Sites—During an actual emergency, government operations will be directed by a small number of key officials (see para "Key Officials and Employees"). However, during the period of recovery, departments of government will have to conduct their expanding operations from alternative locations. It would be at these sites that departmental personnel would assemble.

Mobilization Plans—All employees should be informed of where they will eventually report for duty either during the emergency or during the period immediately after nuclear attacks.

Employee Survival Plan—All departments of government have a responsibility toward educating all their employees regarding personal survival measures. These measures must be consistent with those adopted by the municipality in which the department is located.

Resources Surveys—Each department must be responsible for surveying and maintaining up to

date records of all equipment and resources which would be required for emergency operations. Even those departments which do not have an emergency function may have resources which could be utilized by other agencies during an emergency.

The Plan—Each department, with or without emergency functions, must develop a departmental emergency plan. These plans must then be co-ordinated into a single plan for the level of government concerned.

#### Conclusion

In conclusion, there are probably five salient points which bear on civil emergency planning at the provincial and municipal levels of government:

government emergency plans must have a capability of instant operational readiness;

civil defence is an activity of government in an emergency;

emergency planning cannot be divorced from everyday activities of government;

plans for population survival must be developed in concert with plans for survival of

all emergency planning is dependent upon existing agencies or departments of government.

#### THE ARMY IN NATIONAL SURVIVAL

#### **Directorate of Survival Operations and Plans**

PRIVY COUNCIL Order 656 of 1959 allotted eight tasks to the Minister of National Defence and these were passed on to the army. The other two services, and the facilities of the Defence Research Board, support and assist the army in this survival field.

#### Warning of Attack

The army is responsible for "the provision of technical facilities and operation of a system to give warning to the public of the likelihood and imminence of attack".

A group of officers has been established in the Combined Operations Centre of the RCAF Air Defence Command at St. Hubert. Another group will soon be located at HQ NORAD in Colorado Springs. Additionally, smaller groups will be at the headquarters of the various NORAD regions. These various groups will keep in touch with the tactical situation.

A Federal Warning Centre has been established in Ottawa and is manned 24 hours a day. It is in direct touch by teletype with St. Hubert and through St. Hubert, with HQ NORAD. This centre is plotting fallout twice daily based on attacks on major Canadian cities. It is the responsibility of the officers in the Federal Warning Centre to obtain government authority to issue the warning throughout Canada. A Provincial Warning Centre has been established in each province with similar responsibilities for plotting fallout and issuing warnings of attack or fallout. Communications have been installed to connect all of these elements of the warning system together.

The army must also carry the warning right through to the public by means of sirens or whatever devices are used to attract attention. Communications to do this vary in the different provinces and are not yet as satisfactory as they should be. A limited number of sirens are installed and it is intended to expand the coverage being provided.

#### Location and Warning of Fallout

The second task is "determining the location of a nuclear explosion and the patterns of fallout, and giving the necessary warning of fallout to the public".

It has been necessary to make a thorough study of American proposals and then attempt to design a Canadian system that will work in with the American system and give adequate coverage in Canada.

The system decided upon will do two things: first, give preference in observing and reporting nuclear bursts and radio-active fallout in the vicinity of our major centres of population and, second, give similar coverage, to a somewhat lesser degree, for the remainder of the country.

#### **Assessing Damage**

The third responsibility is "assessment of damage and casualties from attack and fallout".

The responsibility of the Department of National Defence is limited to giving the degree of damage that has resulted in various areas from nuclear attack. This information will be used by others to determine casualties to the population and resources and the numbers and amounts surviving.

#### Re-Entry

The fourth responsibility, and much the biggest in the event of attack, is "controlling, directing and carrying out re-entry into areas damaged by a nuclear explosion or contaminated by serious radio-active fallout, decontamination work in those areas and the rescue and

provision of first aid to those trapped or injured". Canadian Forces Medical Services are responsible for sorting the casualties and providing initial treatment as the first link in the evacuation chain.

#### Police, Fire and Utilities

The fifth and sixth items of responsibility are "direction of police and fire services in seriously damaged or contaminated areas which are the object of re-entry operations including the control of traffic and movement of people in those areas", and, "direction of municipal and other services for the maintenance and repair of water and sewer systems in seriously damaged or contaminated areas".

These three tasks would go together in the event of attack and would form the basis of survival operations. The army is conducting exercises and other training in preparation for them. Most of the equipment needed is on hand or on order.

#### Law and Order

The seventh item in the Civil Defence Order is "provision of emergency support to provincial and municipal authorities in the maintenance of law and order and in dealing with panic or the breakdown of civilian authority".

The army has always had this responsibility—that of aid to the civil power. If this country should come under nuclear attack the new aspect of this responsibility would probably be one of magnitude. It should be noted that, in this task, the army must support civilian authority if and when requested to do so while in the seven other tasks are either in being now or would commence immediately following an attack.

#### **Emergency Communications**

The final responsibility is "maintenance and operation of emergency communication facilities".

Army communications are being strengthened and expanded so that they may be adequate to support all the above operations and also handle such other traffic as may be necessary on behalf of the Federal Government.

In the event of nuclear attack on our country, the army would have heavy responsibilities in its survival operations. Planning, procurement, and training are going forward as quickly as possible to ensure that it will be ready in the event of emergency.

#### THE WINDSOR EXPLOSION

The following article is a brief summary of a report given by Mr. H. A. Bird, Co-ordinator of Public Survival for Windsor, Riverside and Essex County, to a recent conference at the Canadian Civil Defence College.

Shortly after 2:00 P.M. on 25 October 1960, I was preparing various materials for a Welfare Centre Training Exercise, when an unusual number of emergency vehicles passed my office, going north on Ouellette Avenue. I went outside and saw that the vehicles had stopped in the first block south of the Prince Edward Hotel. Traffic had come to a halt and everyone appeared to be running toward that area.

I went down to investigate and found that the Metropolitan Store was the scene of the disaster. The glass had been blown out of the front of the store and was laying on the public street to Maiden Lane, which is a half a block away. Injured people were lying out on the street and many injured people were streaming out of the store. The Police and Fire Departments were assisting ambulance crews in loading the victims into the ambulances for the hospital.

The inside of the store was black and in a shambles. The cries of the injured could be heard. Police and Fire Department officials appealed to me for emergency lights and rescue equipment. Mayor Patrick arrived and requested me to get the rescue equipment and manpower to help. A general call-up of Civil Defence volunteers was put into effect on a pre-arranged land line fan-out. The Chief Rescue Officer detailed one of his drivers to bring the rescue vehicle to headquarters. (This truck is kept loaded with emergency equipment at all times.) It arrived shortly after 2:40 P.M. and was escorted by the police to the scene of the disaster and the equipment was made available to the Police and Fire departments. Some 70 rescue personnel, and the Chief Rescue Officer, together with 50 auxiliary police and 10 wardens were despatched to the scene. Our local hospitals were able to take care of all victims and they did an excellent job. They all put their Civil Defence disaster plan into operation and were ready and waiting to receive the patients before the first ambulance arrived.

Over 150 people were taken from the store, many in serious condition. Only two died. The total casualties were 10 dead, 150 or more injured. 64 were detained in the hospital for treatment.

At the scene of the disaster, orders were being given by the various Police and Fire officials. In fact, trained Civil Defence Rescue personnel, together with their leaders, were being ignored completely and some confusion did develop as the result of lack of co-ordination. The Police would allow the rescue workers in, the Fire Department would order them out, and vice versa. Many attempts were made during the night to get some authority to co-ordinate the rescue effort but it was 11:00 A.M. Wednesday, October 26th before this was accomplished. I do not wish to take any credit away from the Police and Fire Departments for the wonderful way they went to work in the initial stages. Their leaders, however, became confused and there was lack of co-ordination and effort.

At 11:00 A.M. on Wednesday, October 26th, I was ordered by the Mayor to take complete control of rescue operations. This went on continuously until 12:00 Noon on Friday. During that time, it was a great team effort. Everyone carried out their respective duties in a most praiseworthy manner and I received the full co-operation from all services. It revived the spirit of the volunteers, who came forward and did an excellent job. Over 300 volunteers took part in the actual rescue operations and police duties. The Emergency Welfare and Social Service workers gave freely of their time and ability to get a job done. Only one of our volunteers suffered a slight injury, but after being examined by a doctor, he carried on with his work. This must speak well of the kind of training and leadership given to the rescue personnel.

